



Riemann and Melodic Analysis: Studies in Folk-Musical Tonality

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<CT>Riemann and Melodic Analysis</CT>

<CST>Studies in Folk-Musical Tonality</CST>

<CA>Matthew Gelbart and Alexander Rehding</CA>

One of the last satisfactions of Hugo Riemann's career was his appointment as director of the Royal Research Institute for Musicology at the University of Leipzig in 1914.¹ Two years later Riemann's study, *Folkloristische Tonalitätsstudien*, or "Studies in Folk-Musical Tonality" (1916) appeared as the first volume of the Institute's series of monographs. The question of music from outside the common-practice repertoire had already occupied him for some twenty years; during this time he had published articles on Japanese music, Byzantine chant, and had arranged a number of "Original Chinese and Japanese songs" for violin and piano. To extend and deepen this foray into "world music" seemed fitting for an important occasion such as the inaugural publication of his research institute.

The scope of Riemann's study was extraordinarily ambitious—in addition to the Scottish, Irish, Welsh, Scandinavian, and Spanish songs and the Gregorian chant that the subtitle of his book lists, he also discussed examples from Chinese and Japanese music and principles of ancient Greek music theory. And yet, given that Riemann spent much of his career defending tonality as a natural and universal system, it may seem surprising that late in life Riemann would turn to non-European music. Was he really going to throw his firmly held beliefs overboard? In fact, the motivation for Riemann's study of music from different cultures, ironically, was largely to stem the tide of musical ethnography. The "comparative method" of studying music was gaining ground in the early twentieth century—thanks, in no small part, to recent improvements

in recording technology, namely the phonograph. Riemann railed particularly against this machine and the scientific observations made on the basis of its recordings. He concludes his study with a stern prediction:

<EXT>In light of the role that phonographic recordings play in the young science of musical ethnography, we must also point out that the transcription of a melody according to the recording requires a well-trained musician, but also familiarity with the tonal system to which the melody belongs. . . . Examinations such as the present ones serve in the first place the better training of the ear for a fuller understanding of the structure of melodies. Once these are deepened, presumably not a lot will be left of the intervals that contradict our musical system, such as $\frac{3}{4}$ or $\frac{5}{4}$ tones, or the so-called “neutral” thirds that tone psychologists now believe to hear out of the recording.ⁱⁱ </EXT>

One of the most important centers of comparative musicology was the Berlin school around Carl Stumpf and Erich Moritz von Hornbostel,ⁱⁱⁱ and it is against those scholars that Riemann polemicizes here—though, as was his wont, without mentioning any names. In other words, by looking into new repertoires, Riemann was not contradicting his earlier beliefs about the natural basis of the tonal system, but ultimately hoping to reinforce them. In fact, what the comparative musicologists had done was to raise the stakes for Riemann: if he wanted to uphold his claim that his systematic views of music were indeed universal and natural—and not just historically and geographically limited, as comparative musicologists suggested—then he had to tackle music outside the European tonal mainstream head-on to show how his principles still applied.

The late *Folkloristische Tonalitätsstudien* is unique among Riemann's theoretical studies in that it is his only treatise not to start out from the assumption of tonal, triadic harmonies; instead, it approaches musical structures from a strictly melodic angle. This startling change has moved some commentators to speculate that, had Riemann lived longer, he would have fully reconsidered the harmonic foundations of his musical world-view.^{iv} While his death in 1919 makes a definitive answer virtually impossible, it is worth remembering that such a melodic approach was, on one level, a necessity: if Riemann was to consider monophonic repertoires in their own right, his usual triadic approach—on the basis of the principle of *Klangvertretung*, the assumption that each pitch was representative of a triad—would not get him very far. In the past, it is true, he had followed the popular tradition of supplying East-Asian melodies with triadic harmonies.^v Here, however, the very possibility of *Klangvertretung* was in question; only by suspending this principle, at least temporarily, could Riemann counter the challenge of the comparative musicologists.

<H1>Sources and Predecessors</H1>

In *Folkloristische Tonalitätsstudien* Riemann took up the challenge from the comparative musicologists by attempting to broaden his own evolutionary pre-history of the diatonic system. The historiographic model he used was the same Whiggish model that had already served him so well in his *Geschichte der Musiktheorie* and his *Handbuch der Musikgeschichte*, where the gradual emergence and shaping-up ~~and emergence~~ of an idea is documented by any historical evidence available. While Riemann was hardly alone in thinking about history in this systematic, teleological way, which was rather typical of his age, *Folkloristische Tonalitätsstudien* stands out

from the many accounts that it echoes by incorporating some of Riemann's favored models of thinking.

It may seem that, in not starting out with harmony, Riemann was ready to jettison the dualistic foundations of his musical thought, which he had so rigorously defended. This, however, would probably mean to take the impact of *Folkloristische Tonalitätsstudien* a little too far. For, as we shall see, the basic principles of mirror-symmetry on which his notion of harmonic dualism was based was still firmly in place in the principles guiding *Folkloristische Tonalitätsstudien*. In many ways, in fact, [his-Riemann's](#) desire for symmetry was the most unique and personal element he brought to a narrative that otherwise largely followed paths well-worn by the time Riemann was writing.

Even Riemann's focus on melody was not so much a departure from his earlier thinking as it may seem. Rather, this approach was partly the result of precedent and even necessity: in the history of European writing about non-Western and "folk" music, scalar-based theories had predominated to the point of near exclusion of other approaches to the music. What is more, while he eschewed harmonic dualism in this study—in favor of what could be dubbed "scalar" dualism—his justification was quite simply that he was here significantly concerned with the *emergence* of the major third, the crucial element that made triadic harmony possible. In this sense, his study of ancient and non-Western music formed a pre-history to the modern major-minor diatonic system, and is implicitly and in parts explicitly conceived as such. As part of this evolutionary model, Riemann's scalar discussions turn out to fit comfortably into his earlier thought.

Indeed, they expand directly from that earlier writing. Many of the ideas and details in *Folkloristische Tonalitätsstudien* go back to Riemann's *Handbuch der Musikgeschichte* (1904–

1913), and before that to articles he had written on Japanese and other non-Western musics (1902 and 1906).^{vi} In these articles and books, Riemann had laid out his belief that the oldest ancient Greek scale was an anhemitonic pentatonic one.^{vii} From this ancient anhemitonic manifestation, Riemann asserted, the scale would develop through a more “advanced” heptatonic gamut (and then later develop also *hemitonic* pentatonic forms). In other words, the introduction of half steps into the anhemitonic pentatonic *ur*-scale would ultimately, if slowly, lay the groundwork for modern harmony and tonality. Already in the *Handbuch*, Riemann had incorporated into his narrative the idea that Greek, Japanese, and Chinese music shared the same path, and he hinted that Scottish and other Celtic and Scandinavian music followed a similar line as well.^{viii} All these claims come center-stage in *Folkloristische Tonalitätsstudien*, where this “pre-history” of universal tonal principles itself becomes Riemann’s focus.

This rhetorical use of multiple parallel examples from different countries to imply that there was a natural, teleological evolution from pentatonicism toward diatonicism and common practice tonality was, however, not only a pre-existing tool within Riemann’s own writing on non-Western and “ancient” music before *Folkloristische Tonalitätsstudien*; it was also a common trope going back over a century even when Riemann was writing. Riemann was thus drawing on several established narratives and theories: about pentatonicism and nature, about connections between ancient Greek, Chinese, and Scottish music, and about music’s inevitable course of development along a path from nature to civilization.

The progenitor of such theories in full-grown form was Charles Burney. Near the start of his four-volume *General History of Music* (1776–1789), Burney had advanced an interpretation—worked out by himself and his friend Thomas Twining—of a crucial passage in (Pseudo)-Plutarch’s *De Musica*. Primarily, Burney tackled Plutarch’s claim that the Greek

Enharmonic genus was the oldest among the three genera (diatonic, chromatic, enharmonic).

This statement appeared counterintuitive since the *diesis* (quarter-tone) that defined the enharmonic tetrachord seemed to many like an inherently “late” development in Greek theory. Burney explained that he read Plutarch to mean that *before* the enharmonic genus came to be defined by its *diesis*, it was already marked by a “gap” in the notes of the tetrachord.^{ix} He went on to reconstruct a scale based on this version of the enharmonic tetrachord, and called it the “old enharmonic scale.”^x The scale Burney posited was a hemitonic pentatonic scale; in his version it runs (descending) D–B<flat>–A–F–E–D. For writers in Burney’s wake, the most salient feature of Burney’s discussion was not so much his reconstruction of this “gapped” scale as the proto-Greek paradigm, but rather the cross-cultural comparisons he brought to bear on it. When Burney presented the Greek scale-reconstruction, he immediately followed it with the declaration: “Now this is exactly the old Scots scale in the minor key.”^{xi} Having roped in Scottish music, he asserted that Chinese music used the same scale as well. Alone, these connections might have been dropped as passing dilettantish observations, but Burney provided an explanation that turned out to be irresistibly tantalizing to his readers and followers. He wrote:

<EXT>It is not my intention to insinuate by this that the one nation had its music from the other, or that either [China or Scotland] was obliged to ancient Greece for its melody; though there is a strong resemblance in all three. The similarity however, at least proves them all to be more natural than they at first seem to be, as well as more ancient. The Chinese are extremely tenacious of old customs, and equally enemies to innovation with the ancient Aegyptians, which favours the idea of the high antiquity of this simple music; and as there is reason to believe it very like that of the most

ancient Greek melodies, it is not difficult to suppose it to be a species of music that is natural to a people of simple manners during the infancy of civilization and arts among them.^{xiii} </EXT>

Burney's connections between Greek, Chinese, and Scottish music—based on the idea that the pentatonic scale was “natural”—were echoed quickly and widely by Orientalist writers and “universal” music historians, though almost all immediately corrected Burney's calculations or otherwise adjusted his theory in order to posit that the shared “natural” scale was an *anhemitonic* pentatonic scale (that is, D–B–A–F<sharp>–E–D descending, or transposed, the black notes on the piano) rather than the hemitonic version Burney had used as the shared scale.^{xiii} Thence followed the increasingly widespread idea that the heptatonic scale, with its two half-step intervals including a leading tone, was a natural extension and development, formed through filling in the gaps of the “universal, primitive” anhemitonic pentatonic scale. Common-practice tonality was the final step in this teleological narrative.

It is unclear exactly how much of Burney's discussion Riemann knew and when, or why, he ignored it when he wrote his own interpretation of Plutarch in the first volume of his *Handbuch der Musikgeschichte*.^{xiv} In principle, Burney should have been quite familiar to Riemann, and he would refer to Burney's history vaguely at least in the next volume of his *Handbuch*.^{xv} Furthermore, in Johann Nikolaus Forkel's *Allgemeine Geschichte der Musik*, Forkel had quoted Burney's discussion at several pages' length in order to support parts of Burney's findings and quibble with other aspects of his reading of Plutarch^{xvi}—and Riemann had certainly read Forkel. Yet in his own discussion of the Enharmonic and early Greek scales, he cited neither writer. To be sure, theories of scales developing from anhemitonic pentatonicism toward tonal

heptatonicism had become so widespread by the mid-nineteenth century that countless writers gave very similar interpretations of Plutarch's enharmonic discussion and noted very similar cross-cultural comparisons without even citing Burney anymore. Sometimes there was a clear path back to Burney via intermediate sources. In other cases, such as that of Carl Fortlage,^{xvii} the source-influences are somewhat more obscure. Helmholtz, for one, did not cite Burney, but his reconstruction of the old Olympian scale as a *hemitonic* pentatonic scale was actually closer to Burney's original ideas than those of others at the time who explicitly referred back to Burney.^{xviii}

Riemann must have been familiar with more of this well-known discourse than he let on when he proceeded to his own dissection of the much-chewed-over passage in Plutarch. In his own account, Riemann explained that by attributing the invention of the enharmonic to Olympos, it might seem Plutarch was claiming that Olympos had been the first to split the half tone into smaller units. However, Riemann maintained, the rest of Plutarch's explanation clearly showed that there had been an older "enharmonic" characterized by gaps in the scale rather than quarter-tone infills within the smaller intervals.^{xix} Not only does Riemann's rhetoric and presentation echo Burney patently,^{xx} but Riemann even dismisses the same parenthetic aside in the Plutarch (as extraneous and erroneous) that Burney had dismissed—both did so in order to reach their conclusions that the old enharmonic scale was free of microtonal intervals.^{xxi} Yet Riemann did not cite Burney or other predecessors who echoed similar interpretations. Riemann, we know, was a thinker prone to systematic thought, and musings such as those of Burney and many of those who followed him may have seemed unsystematic and dilettantish enough to ignore as "real" thought on the issue. Furthermore, Riemann's scale reconstruction differed from Burney's—as we have seen—by positing the old enharmonic scale as an anhemitonic rather than

hemitonic pentatonic construction. Those writers who had developed the most systematic explanations of *anhemitonic* pentatonic scale-systems in Greek, Chinese, and British folk music, while openly building on Burney's writing, were Scots, whose English-language work may have remained less known to Riemann.^{xxii} In any case, the only predecessors that Riemann *did* address directly were those whose completely different interpretations he discarded (Fétis), and those whose work he considered "on the right path" (for associating the old enharmonic with the *anhemitonic* pentatonic), but not quite fully worked-out (Fortlage, Bellermand, and Gevaert).^{xxiii} Riemann also went beyond other German writers in supplementing his reading of Plutarch with a good deal of evidence from other sources.

From our current perspective, it is ironic that Riemann's reconstruction itself was every bit as anecdotal and his logic every bit as questionable as Burney's, even if his resulting theories are much more systematized (which perhaps signals an even bigger logical leap than Burney's). For example, it is unclear on what grounds Riemann asserts that the *hemitonic* pentatonic version of a later Greek period ("deutera archaic period") could ~~only~~ have developed only after a middle era in which the *anhemitonic* scale had evolved into a full heptatonic scale.^{xxiv} Riemann's evolutionary logic from simple to complex is not borne out by the historical record: Plutarch himself had argued that the Olympian enharmonic genus was formed by the omission of *previously existing* notes rather than constituting a true proto-scale.^{xxv} Riemann dismisses this element of Plutarch's reasoning, ostensibly because other sources indicated to him that the early Greek era was not advanced enough to have a seven-tone scale yet.^{xxvi} Such tautological reasoning is typical of the long tradition of using examples of scales developing similarly across different cultures, while ignoring certain data or sources that did not square with the theory. Although Riemann, like Burney and many writers in between, sometimes suggested causal,

contextual, or evolutionary links between disparate events, he was often not too worried about the links. On the contrary, he was convinced that the more often an idea flared up in *different* circumstances the more likely it would be to contain a kernel of truth that ~~will~~would eventually come to the fore.^{xxvii} In sum, regarding Riemann's relationship to his theorizing predecessors, it is hard to know what is suppression, what is ignorance, and what work Riemann simply considered unworthy of comment or acknowledgement. But it remains curious how little the well-read Riemann cited his forbears in outlining his narrative of an implied universal scale development.

It is especially ~~odd~~striking that Riemann did not call on his precursors for support, considering the defensive context in which he wrote *Folkloristische Tonalitätsstudien*: as we recall, the whole project was largely conceived as a critical response to the new theories of the Berlin comparative musicologists, who based their findings on phonograph recordings. Given the nature of the new theories against which Riemann was reacting, it might have helped him to cite his many intellectual antecedents rather than trying to stand alone against a modern trend.

<H1>Intellectual Antagonists</H1>

What exactly set Riemann going with *Folkloristische Tonalitätsstudien*? The reason the findings and theories of the Berlin comparative musicologists irked Riemann was that they wreaked havoc with the kinds of musical universals on which Riemann's theories most depended. Historically, there had been two primary ways of asserting natural universality for musical systems. The oldest way was to assert that the universals of music lay outside the human mind. This idea went back to Pythagorean theory, to the "harmony of the spheres," and to Rameau's interest in the *corps sonore* and the overtone series. However, this path had largely been

subordinated from the later eighteenth century by attempts to find music's universals in *human* nature and development. When Rousseau linked the origin of music to human proto-language, he was throwing down a gauntlet not only to Rameau but to a whole long-standing apparatus of music theory and historiography. Rousseau was eagerly echoed and followed, with constantly expanding variations, by Herder and many others. It was this conception of universal human mental patterning manifest in music that led to theories such as Burney's about societies passing through predictable early phases in which they would stumble on scales hardwired into the human mind, and carried through into Darwin's claims about the origins of music in song.^{xxviii}

The acoustic experiments of Helmholtz seemed to swing the pendulum back in the extra-human direction. At first, Helmholtz and his English translator Alexander Ellis, who also conducted his own musical experiments, must have tempted Riemann with their work, in a positivistic age, on restoring the extra-human scientific basis of music.

To musicians and critics such as Riemann who were invested in nineteenth-century German music, however, Helmholtz's and Ellis's results were less tempting than their methods—for in their manners, both Helmholtz and Ellis concluded that despite increasingly secure understanding of the acoustical and physical properties of sound, human musical activity was somewhat arbitrary, that there was little natural justification for one musical system over another.^{xxix} Following Ellis, the Berlin comparative musicologists were outwardly skeptical about the existence of universal pentatonic and diatonic scales—ones so engrained in the human brain that they would at some point become the bases for music in any culture. This skepticism seemed to harden as the growing phonographic archive of music collected from all over the world, coupled to more accurate pitch measurements, showed a greater variety of scales and systems than earlier writers had known or acknowledged.^{xxx}

Any characterization of the Berlin school's work as moving cleanly away from universalizing explanations, however, would [be](#) overly simple, for the music psychologists and comparative musicologists such as Stumpf and Hornbostel still hoped and believed they would find universals on which to base their study of musical development in different cultures. One way they did so was to hypothesize—in the face of the new evidence from around the world—new ways of grounding all music in a natural extra-human scientific system. (Such a system was von Hornbostel's rather far-fetched theory of “blown fifths.”^{xxxii}) More flexible and intriguing was Carl Stumpf's idea, set forth in *The Beginnings of Music* (1909), that acoustical and human physiological bases of music might combine to shape a combination of recurrent features and tastes of musicians around the world while still leaving room for more arbitrary elements. Stumpf hypothesized that the octave, and to a lesser extent intervals such as the fourth and fifth, were naturally used for fusing and carrying voices in group shouts across space, and that these psycho-physio-acoustic universals worked their way into a variety of systems with different infilling notes and properties.^{xxxii} Riemann initially found Stumpf's ideas extremely helpful, but he was troubled by the fact that it implied that his apparently universal triadic harmony was only one arbitrary outgrowth of a more basic situation.^{xxxiii}

Riemann's position is unique in its own mix of acoustical and psychological justifications—driven by his joint desire to assert the “rightness” of triadic tonality and of harmonic dualism. In fact, Riemann's reasoning changed over time: his own personal journey showed a move from attempts to justify his music theory in objective extra-human terms to hard physiological terms to a focus on tone psychology.^{xxxiv} This personal trajectory led to Riemann changing his arguments justifying harmonic dualism, but it also affected his late thinking about the scalar fundamentals of music. By the time he was writing *Folkloristische Tonalitätsstudien*,

he had come to regard the phonograph as a false objectivism—a device that recorded sounds as they *existed acoustically* in particular instances rather than as they *should be* or as they were *perceived*, processed, and understood. In the introduction to *Folkloristische Tonalitätsstudien*, he thus enters into an extended criticism of relying on the phonograph for “evidence” about scales and modes in different cultures—asserting his conclusion that the real “natural” elements in music are psychological rather than physical—or at least resulted from a psychological filter through which acoustic phenomena and physiological sound—creation and reception passed.^{xxxv}

This allowed him to begin again from the position that, *contra* the comparative musicologists, the diatonic scale was indeed a musical universal. In general, Riemann was concerned increasingly with protecting what he regarded as a clear, natural, and universal set of rules—which, not at all coincidentally, were specifically the rules that guided the nineteenth-century German music he prized. (In fact, he framed the entire book by starting out with a claim that “national” and “nationalist” music [—read: non-German nationalist music—] had run its course, having already given way once again to a broader, universal [—read: German—] current.)^{xxxvi} [AU: Two em-dashes max per sentence. I changed em-dashes to brackets (which I think looks cleaner anyway). OK? AR: Ok.] He was thus defending this nineteenth-century

German canon implicitly, even in his work on other musics, by showing how those other musics either contributed to a demonstration of the apparently universal rules on which the music he treasured was based, or ~~how they~~ deviated from those rules. (And, one might add, spinning out Riemann’s way of thinking: if they deviated, so much the worse for those types of music.) All this, ultimately, set him along lines more similar to Burney’s goals and those of other pre-Helmholtz writers who were primarily concerned more with describing and prescribing the

course of music history to conform with their own world views than with researching sounds and sound-cultures from around the world for acoustical, comparative, or scientific reasons.

We have already considered what Riemann's work shared with these earlier, "normative" studies: like them, he dwells on a universalizing narrative of scale development beginning with pentatonicism, and charts a development of scales toward a "modern" (proto-)tonal form. Riemann's narrative, again like those of his predecessors, aspired to being a narrative of *all* music, teleologically leading toward the rules and practices of the music he most valued—so he implied that every musical culture had to undergo the same stages. And he chose the same examples as they had done (Chinese, Greek, and Scottish) to suggest that all cultures had passed through this stage, or in some cases were still passing through it. In this spirit, Riemann spoke of Olympos as "the main representative of an epoch . . . which created melodies with the homely simplicity that we know from ancient Chinese and Japanese, as well as Celtic melodies."^{xxxvii} For all these reasons, Riemann might have gained by acknowledging his debt to a past discourse when he framed the narrative aspect of *Folkloristische Tonalitätsstudien*. Yet, for precisely the same reasons, he may also have been moved to hold back—for fear of appearing to present an argument that was the product of an age before the modern acoustical-scientific rigor of Helmholtz and the Berlin school.

<H1>Riemann's Narrative of Scalar Evolution</H1>

So far, we have been discussing how Riemann responds to a long established discourse. In the body of *Folkloristische Tonalitätsstudien* itself, Riemann adds his personal stamp to this abstract background. He brings his preferences for symmetrical conceptualization to bear on tetrachordal

theory, and he pursues his long-standing quest for the elusive “pure minor mode” as part of his evolutionary narrative.

The diatonic scale whose evolution Riemann’s study sketches out in the book consists of three major structural elements:

<NL>

1. Pentatonicism

2. Tetrachords

3. Inserted semitones</NL>

In order to make his argument as strong as possible—and in order to bolster his universalist agenda—Riemann explores these structural elements in different musical cultures. As for the first two, he examines pentatonic structures in East Asian and Celtic repertoires, and tetrachords in ancient Greek music and Gregorian chant. Both are different organizing principles for scales, but Riemann argues that both need to coexist conceptually to allow the formation of the modern diatonic scale. As we will see, the binding glue between these disparate musical systems—paving the path from one to the other, and ultimately on to the modern diatonic scale—is provided with the emergence of the third (and the concomitant scalar interval of the semitone), which in the guise of the leading tone finally makes fully fledged diatonicism possible. Unifying factors such as chronology or geographical contiguity do not play a big part in Riemann’s considerations: examples drawn from Gregorian antiphons can stand next to snippets of Celtic song.^{xxxviii} What unites these repertoires is that they are all highly developed monophonic systems that help form a prehistory for Riemann’s main narrative of Western music.

Folkloristische Tonalitätsstudien is Riemann’s attempt to consider these repertoires in greater depth for their melodic properties. And each repertoire that Riemann draws upon in the

construction of his argument delivers further critical elements that Riemann requires to document his evolutionary narrative.

Riemann begins his observations with a study of anhemitonic pentatonicism. As in earlier theories seeking to find the same pentatonic to diatonic or chromatic path in multiple heterogeneous cultures in China, Japan, Greece, and the British Isles, historical accuracy often fell victim to the urge to project an apparently natural progression onto these different music histories. Drawing on Chinese and Japanese derivations of the pentatonic scale, Riemann explains the foundation of anhemitonic pentatonic scales as chains of fifths extending symmetrically around a central pitch. He gives three examples:

[ED: Would these be EQs? AR: No, just a diagram. The letters and dashes can stay as they are, once they are centered. The letters in brackets should be the same size (or only slightly smaller) but surrounded by a circle. It's the same idea as for the (.) symbol that is introduced two paragraphs below.]

<center, replace parentheses with circle>f—c—(g)—d—a

<center, replace parentheses with circle>c—g—(d)—a—e

<center, replace parentheses with circle>g—d—(a)—e—b

Example 4.1 shows how these chains of fifths are then collapsed into close position—positing the principle of octave equivalence—to create pentatonic scales. While the idea of deriving anhemitonic pentatonic scales from chains of fifths has a long and distinguished pedigree, going back to Rameau and Abbé Roussier in the eighteenth century, Riemann gives this story a symmetrical twist: where other writers had based the progression on the bottom pitch (which acted as a *son générateur*) and considered this the root of the scale, Riemann turned his attention

to the central pitch. In accordance with his dualistic principles, Riemann considers this central pitch the “root,” and adds the other scalar elements upwards and downwards in symmetrical opposition around this central pitch. This symmetrical principle applies both when he presented the pitches as stacked fifths and when he collapsed the pitches into a scale contained in a single octave.

<Ex. 4.1>

When treating the collection as a scale, Riemann employs his familiar dualistic taxonomy of Roman numbers signifying the minor principle (counting down from the “root”), and Arabic numbers signifying the major principle (counting upwards). The circle with the dot <(.)> [Comp: Pls. note that <(.)> throughout should be a circle with a dot inside. The dot should be in the center of the circle. The circle should be roughly the size of a capital O. Thanks.] signifies the pitch that Riemann designates as the center of the scale.

Riemann introduces two theoretical terms that he adopts from ancient Greek theory. First, Riemann calls the central pitch <(.)> of the pentatonic formation *mese*, after the fixed middle reference pitch of the Greek theoretical tradition. He regards the *mese* as “playing the part of the tonic.”^{xxxix} It is noticeable that for the most part Riemann tends to avoid the term and quietly employs the symbol <(.)> instead—presumably because many of the theoretical implications of the Greek term do not match Riemann’s agenda. Second, the central complex of *mese* plus its upper and lower neighbors Riemann calls, again recoinning a Greek term, a *pyknon*, in this case, a “major-third *pyknon*.” In Greek theory, the *pyknon* generally refers to the pair of smaller intervals of the tetrachord in the chromatic and enharmonic genera. Riemann’s use of the term here refers, rather liberally, to the three central notes in the middle of his pentatonic formations that are separated by whole-tone steps. In other words, *pyknon* refers to the II–<(.)>–2 complex

in the above diagrams. The conclusion that Riemann's use of these Greek terms is tendentious is difficult to deny; it is, however, anything but arbitrary: the Greek terms lend gravitas and legitimacy to Riemann's theory. Furthermore, in applying terms from tetrachordal theory to pentatonic structures, he implies an integral connection between those two disparate structural models—and as we shall see below, this point greatly mattered to Riemann.

The justification Riemann gives for his decision to depart from the established precedent and assign the tonic (or tonic-like) role to the central pitch is flimsy at best.^{xl} He admits that the only support he has for calling $\langle (\cdot) \rangle$ the most important note is that in his reconstruction of the oldest Greek enharmonic scale, it is the pitch that would have been designated *mese*.^{xli} To support his claim, he presents one melody as an example of a case of a *mese* in such proto-tonic function, in the sense of a reference point around which the melody circles. It is, however, not a Greek example but a Chinese melody, called “Tsi Tschong.”^{xlii} This melody is reproduced in [Example-example 4.2](#). It works as an example “in the absence of existing Olympian music,”^{xliii} as though the Chinese can simply stand in for the ancient Greek—again implying that the pentatonic scale generated a universal system and theory wherever it was used. Riemann observes that the long-established principle of taking the lowest pitch in the generative chain of fifths as the tonic (or “kung,” now working with Chinese terminology) cannot well be applied to “Tsi Tschong,” as no phrase ends on that pitch (in this case C). Rather, most end on D, that is to say, Riemann's *mese*. At the same time, however, Riemann has to concede that [this](#) melody ends on its lower fifth, or G.

<Ex. 4.2>

We might get the impression that this argument is perhaps not the strongest way to introduce the *mese*—and Riemann quietly drops the argument after this: the concept of the

finality of the *mese* plays virtually no part in Riemann's subsequent observations.^{xliv} We shall see, however, that this point becomes strategically important to Riemann's argument: beyond the fact that it provides a theoretical symmetry, Riemann's later explanation of the *subsemitonium modi*, the leading tone, critically depends on it.

Here and elsewhere, Riemann cannot help but add a sideways glance to the (normative) diatonic system, to which all music apparently aspires: in his view, the pentatonic scale is deficient, as it "lacks" the upper and lower thirds (3> and III<), counted outwards from the *mese*. Riemann points out that it is precisely these pitches that will, when chromatically altered, enable modulation to the fifth-related key.^{xlv} In Riemann's explanation of Chinese music theory, Riemann argues that Chinese music fills the wide gap between II and IV and between 2 and 4 with *pien* tones. He asserts that these *pien* tones are rarely employed, usually as changing or neighbor notes,^{xlvi} and that they do not have fixed intonation.^{xlvii} Despite these caveats, Riemann employs the concept of *pien* as though they filled in the thirds in the "deficient" pentatonic scale, and continues to apply the term, culled from its Chinese theoretical context, in all situations to denote the upper or lower third around the *mese*.^{xlviii}

In Chinese music, he contends, modulations can be observed by following the shift of *pykna*, even where there are no *pien* in use. In [Example-example 4.3](#), Riemann observes a shift from the f-scale (or <(.)> g), to a b<flat>-scale and back again, and finally to a c-scale (or <(.)> d). Indeed, the concept of the *pyknon* within Riemann's symmetrical interval-based conception of pentatonicism allows him to relate the complex back to diatonic procedures. Riemann explains with reference to [Example-example 4.4](#): "Many melodies with pentatonic tendencies exhibit—for our ears—a noticeable cadential oscillation between the two relative keys to which the central *pyknon* is common."^{xlix} Depending on whether the central *pyknon*

appears with the upper or lower fourth, the closing gesture can often be heard as a “sinking down from the major root (II) to the minor fifth (IV).”^l Confusingly, Riemann’s verbal explanations here refer to his dualistic model (where the “minor fifth” is the root of the minor mode), while the Roman numbers refer to his new melodic system (i.e., melodic degrees below the *mese*). Here and elsewhere, we see that Riemann is eager to make sense of musical phenomena in the conceptual framework of dualism, even where triadic shapes play no overt part.^{li}

<Ex. 4.3>

<Ex. 4.4>

The sideways glances to diatonic music, and especially to the dualistic minor system, become stronger when Riemann begins discussing the possibility of harmonizing Celtic folksongs in pure minor, as Oettingen suggested in 1866:

<EXT>After Carl Fortlage (1847) had pointed out the role of the flat seventh (instead of the leading tone) in Scandinavian melodies, it was especially Arthur von Oettingen who uncovered the nature of pure minor harmony. Even though the full seven-step minor scale, like the seven-step major scale, had developed from pentatonicism by means of inserting the two filling tones (*pien*), it is nonetheless undeniable that newer music prefers the major scale somewhat. So much so that it has also affected the minor mode by adding alien elements to it that actually belong to the major mode, with the effect that the specifically minor melody and harmony had almost disappeared from consciousness. It was only the rise of a national Nordic music (Hartmann, Gade, Grieg) that drew attention to the peculiar effects of pure minor again.^{lii} </EXT>

One important side aspect of Riemann's agenda in *Folkloristische Tonalitätsstudien* was to explore and promote the pure minor mode, which was of course an integral part of his dualistic project. It is likely, as Riemann's allusion to Scandinavian composers suggests, that his interest in the music of the European fringes—Scandinavia, the British Isles, Spain—was fanned by the hope that the minor mode may have remained in a purer state in these “less civilized” parts.^{liii} With this argument, Riemann hoped to prove, in one fell swoop, not only that the major-minor system had evolved from pentatonic underpinnings but also that the two modern modes were equal.

<H1>From Pentatonicism to Tetrachords</H1>

Tetrachords, here in the most general sense as scalar fragments spanning the interval of a fourth, had already formed the tacit background to Riemann's theoretical considerations of pentatonicism: the terms *mese* and *pyknon* are drawn from Greek tetrachordal theory. He next turned his attention more specifically to the tetrachordal principles of modal music, as axioms supposedly shared between ancient Greek music, Gregorian chant, and Northern European folk song. Riemann acknowledged that strict pentatonicism is irreconcilable with strict tetrachordalism, but, nevertheless, “one can gain a good idea of how the trichords of pentatonicism turned into tetrachords of classical antiquity and the Middle Ages by means of the *pien*.”^{liv} Riemann did not explain how exactly this principle of Chinese music theory manages to function as the historical lubricant that provides such smooth passage from Greek antiquity to the European Middle Ages entered the Western frame of mind, though again, none of Riemann's unacknowledged sources had done so either.^{lv} It seems that such a question would not even have occurred to Riemann: he felt empowered to mix and match these theoretical concepts because

they were merely placeholders for theoretical ideas that he accepted unquestioningly to be universally true.

In explaining the tetrachords, too, Riemann took a synchronic systematizing approach that considered their structural properties without any concern for cultural specificity. Based on a suggestion by the philologist August Boeckh, Riemann proposed an application of three of the Greek modal names to their characteristic tetrachords:^{lvi}

<MCL>

Dorian: D—F G A || B—C D E ($\frac{1}{2} + 1 + 1$ steps) <align letters over next 3 lines>

Phrygian: D E—F G || A B—C D ($1 + \frac{1}{2} + 1$ steps) <align letters>

Lydian: C D E—F || G A B—C ($1 + 1 + \frac{1}{2}$ steps) <align letters>

</MCL>

The critical difference between these tetrachords resides in the location of their semitone, and each of the modes listed here can be thought of as built on a double statement of the same tetrachord. Riemann points out that there is no historical precedent for calling the tetrachords (as opposed to the whole modes) by these names but argues in favor of them because of their rigorous and systematic clarity.

Riemann explains in some detail how he imagines the transition from pentatonic trichord to tetrachord. In [Example-example 4.5](#), he shows how, depending on whether the *píen* is added above or below the central *pyknon* (as 3> or as III<), a Lydian or a Dorian tetrachord will result.

<Ex. 4.5>

In the case of the tetrachord, however, a new musical feature weighs in: the metric positioning of the *píen*. Whether the *píen* occurs on a weak or a strong part of the beat will be of critical importance for a proto-tonal hearing of the structure. Riemann explains: if the newly

formed Lydian tetrachord from the previous example veers towards B, by sounding it on the strong beat, as shown in [Example-example 4.6a](#), then it does not divert from a tonal sense centered on $\langle (.) \rangle A$. Meanwhile, if it sounds the C (the *pien* of $\langle (.) \rangle A$) on the strong beat, as shown in [exampleEx. 4.6b](#), this calls for a reinterpretation of $3 \rangle$ as II, that is to say the new $\langle (.) \rangle$ is D, while B is now heard as the new *pien* (III \langle). It is easy to see that this explanation rather begs the question: it presupposes a tonal hierarchy—for it is only in this context that the *pien* is enabled to act exactly like semitones would in tonal music.

<Ex. 4.6a/b>

Riemann then, in [Example-example 4.7](#), turns to the case of trichords other than the central *pyknon* (i.e., three consecutive scale tones, drawn from of an anhemitonic gamut spanning an interval greater than a third, for example E–G–A, where A is the *mese*). He explains that there are two possible *pien* that can fill in the gap, resulting in different tetrachords. In this example, with III \langle it will be the Phrygian, with III \langle natural \rangle the Dorian. The emphasis on metric weight is the same as before; the positioning of the *pien* can induce a quasi-modulatory shift to a fifth-related *pyknon*.

<Ex. 4.7>

Example 4.8 shows a systematic representation of the three tetrachords (i.e., Dorian, Phrygian, Lydian) and their possible derivations from all possible trichordal fragments by addition of the relevant *pien* tones. It seems that Riemann does not fully trust his own rather exuberant application of the specific Chinese principle of *pien* to generic pentatonicism resulting in Boeckh's neo-Greek tetrachordal system. For this reason, he turns next to the Guidonian hexachord, in search of further support for his synthesizing maneuver. Riemann explains the hexachord here not only as a combination of the three tetrachords (as shown in [Example-example](#)

4.9a), but also as an overlaying of two pentatonic scales with their respective *pien* tones (as shown in [Example-example 4.9b](#)). His point is that tetrachordal and pentatonic theory combine to create proto-diatonicism. Riemann rejoices: “Here again we have another bridge from the melody of primordial times to the rarefied system of the middle ages!”^{lvii}

<Ex. 4.8a–c>

<Ex. 4.9a/b>

Having shown how the interaction of pentatonic and tetrachordal structures can also be applied to the chant repertoire, Riemann proceeds to explain the derivation of the *subsemitonium modi*, the leading tone, in the minor mode. For any evolutionary approach to music this is a problem, as the leading tone in the minor mode must inevitably be figured as an alteration of the natural scale, which requires additional explanation. Riemann’s approach to this issue is oblique, but builds directly on the mechanisms he has laid out previously.

Riemann dwells here particularly on the modulatory potential that *pykna* and *pien* contain (as we have seen particularly in [Examples-examples 4.3 and 4.5–4.7](#)). He underlines, however, that not every sounding of a new *pyknon* signals a shift of tonal center, as a quick comparison with the modern diatonic scale and its three whole-tone *pykna* shows (i.e., groups of two consecutive [whole-tones](#) [centered](#) on \wedge^2 , \wedge^5 , and \wedge^6 of the major scale). Instead, Riemann interprets this analogy in light of the modern harmonic functions, as a shift between *T*, *S*, and *D*.^{lviii}

This is an important point in Riemann’s argument. We finally seem to have reached a breakthrough, where Riemann feels he has gathered enough theoretical evidence to support his tacit agenda, to show that latent tonal structures—proto-functional relations—exist even in monophonic repertoires of other cultures. This might in fact be the reason that Riemann chose to

introduce his concept of the pentatonic scale not just once, but in three fifth-related examples, as we saw in [Example-example 4.1](#) above. The three in combination add up to a suggestive proto-functional scalar ensemble. Modulatory links between them, as we have learned subsequently, would be provided by the strategic employment of *pien*.

Going back to earlier parts of his argument, Riemann explores in greater detail how this tonal analogy applies to non-Western repertoires. In order to explain the derivation of the cadential effect of the leading tone, Riemann needs to revert to an earlier example of pure pentatonicism, the Chinese melody “Tsi Tschong,” which he had already used to argue that the middle note of the *pyknon* functioned as the pentatonic “tonic.” A typical closing gesture, Riemann argues, is found in sounding the upper and lower neighbors before the central pitch, as shown in [Example-example 4.10a](#), drawn from the second measure of [Example-example 4.2](#) above. Riemann contends—implausibly—that in strict anhemitonic pentatonicism this is the only way to draw attention to the central pitch. The assertion may not hold water, but it is necessary for Riemann to continue his broader agenda.

<Ex. 4.10a/b>

To be able to make his point, Riemann needs to rely on his tendentious argument of the *mese* playing the role of “tonic,” which he had ignored in the interim. He gives no evidence of this cadential gesture of circumscribed [whole tone whole tones](#) in pentatonic music other than “Tsi Tschong” itself, but Riemann needs to drive home this point to be able to continue his argument. As far as Riemann is concerned, it seems that there is simply no need for further examples, because he treats this example of Chinese music as nothing more than a demonstration—a structure that can tell us something essential about the relationship between pentatonicism and the modern minor mode in general and that merely *happens* to come from Chinese music.

From here he can claim, as shown in [Example-example 4.10b](#), that more common cadences using leading tones are just alterations of earlier melodic formulae that came about thanks to the insertion of *pien* tones into scales. Riemann here conveniently coins the notion of the “minor-third” *pyknon*, a structure consisting of a three consecutive pitches separated by a semitone and a [whole-tonewhole tone](#), in analogy with the regular *pyknon* that characterized the pure pentatonic scale to explain these variants. On the basis of this new concept, Riemann goes on to argue that the cadential formulae of [Example-example 4.10b](#) should be reheard as implying new tonal centers. That is, if we recognize the central tone in these “minor-third” *pykna* as the *mese*, then the same cadential formulae can be heard in a different scalar significance, as expressed in [Example-example 4.11](#). (Note that the second example inverts the middle tones, which may emphasize the *subsemitonium* to *mese* relation.) These new *mese* are no longer surrounded by two whole-tone steps, but rather by one whole-tone and one semitone step.

<Ex. 4.11>

Riemann concludes: “The fact that the minor-third *pyknon* came to the fore instead of the major-third *pyknon* as the center indicates an emergent understanding of the essence of harmony, a recognition of the third as a part of the sonority, and the separation into major and minor.”^{lix}

How [and when](#) exactly this breakthrough came to pass, Riemann contends with faux modesty, cannot be reconstructed with any certainty. In fact, he had proposed the year 1200 in his previous historical work.^{lx} Here he cautiously suggests a much earlier date—around 700 B.C.—based on his tendentious readings of Aristoxenus and Plutarch. Japanese music, he suggests, [has](#) similarly availed itself of the minor-third *pyknon* from a very early stage onwards.

Riemann requires the minor-third *pyknon* to be able to explain the closing effect of the leading -tone, independent of the major diatonic scale. It is for this reason that early on in his

treatise he had to argue, implausibly, that the *mese* was often the closing pitch: for the “minor-third *pyknon*” in the common-practice tonal system—and probably only there—this contention is true.

<H1>Riemann and Melodic Analysis</H1>

Riemann’s evolutionary history of scalar models posits a number of different stages. Beginning with pentatonicism, the rigidity of the system is expanded by the employment of the *pien*, which allows it to transform into the system of tetrachords. It is noteworthy that these follow a fundamentally different structural principle, as unlike the pentatonic structures that Riemann examines, tetrachords have no inherent symmetry. In *Folkloristische Tonalitätsstudien* Riemann is generally careful not to commit to a chronology but supplies heuristic links between structural stages instead. His explanation of tetrachords as three-note fragments of pentatonic scales with infixed *pien* is historically doubtful, but it allows him to look at all subsequent scalar systems—hexachords and diatonic scales—as combinations of these two principles. Folk music, as nominally the chief object of his study, has been pressed into service to represent a middle ground between strict pentatonicism and modern diatonicism.

Of course, it would be wrong to turn to *Folkloristische Tonalitätsstudien* in the hope of finding new insights into ethnomusicological questions. As we have seen, Riemann had few new facts to add to the study of folk music, he exclusively relied on the field work of others, and his methods of adapting the findings of others were often tendentious. The polemical occasion that gave rise to the study in the first place, and the defensive stance that Riemann occupied in his argument, means that *Folkloristische Tonalitätsstudien* can hardly claim to be more than a curiosity in the history of ethnomusicology.^{lxi}

The polemical aspects of this late study, which are all too easy to dismiss, may overshadow some of its more interesting features. A better angle from which to approach *Folkloristische Tonalitätsstudien* is from the vantage point of the analytical techniques that Riemann brings to bear on melodic structures. From this angle, Riemann's late work does mark a significant departure from his earlier work, which had always considered melodies in terms of their harmonic implications.

Once we take the emphasis away from Riemann's largely indefensible claims concerning non-Western repertoires, a new context opens up in which *Folkloristische Tonalitätsstudien* no longer stands all by itself.^{lxii} In the early years of the twentieth century, the analytical study of melody was fast becoming a focal point of theoretical interest again, after a good century of theoretical neglect: Ernst Kurth, for one, effectively presented a theory of melody in his influential *Grundlagen des linearen Kontrapunkts* (1917), and Heinrich Schenker was busy writing his two-volume *Kontrapunkt* and ~~developing his changing~~^{honing his} notion of the *Urlinie* during those years.

In fact, it seems that Riemann was quite happy to drop the pretensions to non-Western music after *Folkloristische Tonalitätsstudien*, and to admit that in current music-theoretical work the “chief interest is changing from harmony to melody.”^{lxiii} He was confident that his late work—especially in light of his “theory of the tone imaginations”—had an important contribution to make to this paradigm shift.

The best way to Riemann's *Folkloristische Tonalitätsstudien*, then, is with an eye on the unique focus on scalar and melodic structure, and the analytical tools it may provide for melodic analysis—*within* a tonal framework.^{lxiv} The fact that Riemann chose to tackle a group of particularly challenging repertoires brought out some features of his music-theoretical,

systematizing thinking that caused him to rethink some of the foundations of his system:

Riemann's focus on scale formation means that the other factors which are normally central to Riemann's musical thought—harmony and meter—take a back seat here, at least temporarily. As

we have seen, Riemann never quite forg~~o~~es the “universal” forces of tonal harmony and metrical position, which in fact form~~e~~d the backbone of his teleological evolutionary trajectory. ~~Nevertheless, the unique theoretical position he assumeds in *Folkloristische Tonalitätsstudien* provides some valuable insights, not on the repertoires themselves, but on the unrealized potential of inherent in scale formations and melodic structures. *Folkloristische Tonalitätsstudien* thus holds a position that is unique within Riemann's output while also remaining characteristic of that output, in that even this late departure from Riemann's usual analytical practice clearly carries the signature trait of his music-theoretical work, his deep-seated belief in the explanatory power of symmetries. It is particularly with this trademark feature that he left his mark on the analysis of melody. Despite this solitary position within Riemann's output, this late departure from his usual analytical practice clearly carries the signature trait of Riemann's music-theoretical work, his deep-seated belief in the explanatory power of symmetries. It is particularly with this trademark feature that he left his mark on the analysis of melody., which Riemann examines with his characteristic acumen for symmetrical potentialities.~~

<N>ⁱ See Michael Arntz, *Hugo Riemann: Leben, Werk, Wirkung* (Cologne: Concerto-Verlag, 1999), 109, and Willibald Gurlitt, “Hugo Riemann (1849–1919),” *Veröffentlichungen der Akademie der Wissenschaften und der Literatur, Mainz: Abhandlungen der geistes- und sozialwissenschaftlichen Klasse* 25 (1950): 1891.

ⁱⁱ Hugo Riemann, *Folkloristische Tonalitätsstudien* (Leipzig: Breitkopf und Härtel, 1916), 112.

“Angesichts der Rolle, welche in der jungen Wissenschaft der musikalischen Ethnographie die

phonographischen Aufnahmen von Melodien spielen, muß aber auch darauf aufmerksam gemacht werden, daß die Niederschrift einer Melodie nach dem Phonogramm eine Sache ist, die einen tüchtigen Musiker voraussetzt, aber obendrein auch ein Vertrautsein mit dem Tonsystem, dem die Melodie angehört. . . . Untersuchungen wie die vorliegenden dienen auch in erster Linie der besseren Schulung des Hörens für ein volles Verständnis der Struktur von Melodien. Werden dieselben weitergeführt, so wird vermutlich von den unserm Musiksystem widersprechenden Intervallen von $\langle 3/4 \rangle$ - oder $\langle 5/4 \rangle$ -Tönen und von den ‘neutralen’ Terzen, die die Tonpsychologen jetzt aus dem Phonogramm heraushören, nicht allzuviel übrig bleiben.”

ⁱⁱⁱ See Sebastian Klotz, ed., *Vom tönenden Wirbel menschlichen Tuns: Erich M. von Hornbostel als Gestaltpsychologe, Archivar und Musikwissenschaftler* (Berlin: Schibri, 1998).

^{iv} Hellmuth Christian Wolff, “Riemann, Hugo,” *Die Musik in Geschichte und Gegenwart*, ed. Friedrich Blume (Kassel: Bärenreiter, 1949), 11: col. 485.

^v See Hugo Riemann, *Sechs original Japanische und Chinesische Melodien* (Leipzig: Breitkopf und Härtel, 1903).

^{vi} Hugo Riemann, “Über Japanische Musik” *Musikalisches Wochenblatt* 33 (1902): 209–210, 229–231, 245–246, 257–259, 273–274, 289–290; see also “Exotische Musik,” *Max Hesse’s deutscher Musiker-Kalender* 21 (1906): 135–137. In this short article, Riemann distances himself from the group of music theorists that seek exotic harmonies to enrich Western composition, and sides with the comparative musicologists of the Berlin *School*—Stumpf, Abraham, and Hornbostel.

^{vii} Hugo Riemann, *Handbuch der Musikgeschichte* (Leipzig: Breitkopf und Härtel, 1904), 1.1: 40–53 and 162.

^{viii} Riemann, *Handbuch*, 1.1: 50–51.

^{ix} Charles Burney, *General History of Music* (London: Becket, Robson and Robinson, 1776–[1789](#)), 1: 34–42.

^x *Ibid.*, 1: 37.

^{xi} *Ibid.*

^{xii} *Ibid.*, 1: 41.

^{xiii} See Matthew Gelbart, [The](#) *Invention of Folk Music and Art Music* (Cambridge: Cambridge University Press, 2007), 120–152, for a detailed investigation of Burney’s claims and influence.

^{xiv} Riemann, *Handbuch*, 1.1: 43–46.

^{xv} Riemann, *Handbuch*, 1.2: 3.

^{xvi} Forkel, *Allgemeine Geschichte der Musik* (Leipzig: Schwickert, 1788–1801), 1: 335–[337](#).

^{xvii} Carl Fortlage, *Das musikalische System der Griechen in seiner Urgestalt. Aus den Tonleitern des Alypius, zum ersten Male entwickelt* (Leipzig: Breitkopf und Härtel, 1847).

^{xviii} Helmholtz even echoed Burney’s terminology about the “old enharmonic scale” despite his slightly different derivation of the scale (cited from *Sensations of Tone*, 258). [\[Please move full bibliographic info for Helmholtz from next endnote to here.\]](#) Helmholtz’s contemporaries who cited Burney typically disagreed with Burney’s hemitonic reconstruction and found ways to explain why Burney should have reconstructed an anhemitonic scale.

^{xix} Riemann, *Handbuch*, 1.1: 43–44.

^{xx} Like Burney, Riemann is non-committal about the question of whether Olympos actually brought an Asian scale to Greece or whether the scale coincidentally developed in different places based on the same natural principles (see *Handbuch*, 1.1: 50, 162). More specific claims about cultural contact and the Asian origin of Olympos’s scale had appeared in Hermann von Helmholtz’s *On the Sensations of Tone as a Physiological Basis for the Theory of Music*, trans.

Alexander Ellis, 2nd English ed. (London: Longmans, Green, and Co., 1885), 257–258, in German *Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik* (5th ed., Braunschweig: Friedrich Vieweg, 1896), 425–426—coupled to typical claims that “in the first stages of the development of music many nations avoided the use of intervals of less than a tone” and hence formed pentatonic scale. The grandest and most eccentric theory of Asiatic origins for both Greek and Celtic scales had come in G. W. Fink’s *Erste Wanderung der ältesten Tonkunst, als Vorgeschichte der Musik oder als erste Periode derselben* (Essen: Bädcker, 1831), 140–168.

^{xxi} This passage is an aside about the *spondeion*—see the parenthetical remark in (Pseudo-)Plutarch, *Plutarch’s Moralia in Fifteen Volumes*, vol. 14 (Cambridge, MA: Harvard University Press, 1967), 377 (from par. 11 of the original). Riemann argues that the passage was marginalia added by a later reader rather than Plutarch proper and thus ignores it (Riemann, *Handbuch*, 1.1: 44), while Burney had simply claimed that it was “unintelligible” and thus omitted it from his discussion (*General History*, 1: 35, note e). Note that Burney’s dismissal of this passage was the locus of Forkel’s quibble with Burney’s interpretation (*Allgemeine Musikgeschichte*, 1: 336–337).

^{xxii} See, for example, George Thomson, “Dissertation Concerning the National Melodies of Scotland,” in *Select Melodies of Scotland, Interspersed with those of Ireland and Wales* (London and Edinburgh: George Thomson, 1822–1823), 1:3–19; and Alexander Campbell’s preface to the first volume of his collection *Albyn’s Anthology: A Select Collection of the Melodies and Vocal Poetry Peculiar to Scotland and the Isles* (Edinburgh: Oliver and Boyd, 1816).

^{xxiii} Riemann, *Handbuch*, 1.1: 50.

^{xxiv} Ibid. The closest Riemann comes to giving any insight into his claim are some theories about Japanese organology, which he presents in his article “Über Japanische Musik,” and partially repeats in the *Handbuch*.

^{xxv} See *Plutarch's Moralia*, 14: 375.

^{xxvi} See Riemann, *Handbuch*, 1.1: 162–163.

^{xxvii} See especially the oft-cited peroration in Riemann's *Geschichte der Musiktheorie* (Berlin: Max Hesse, 1898), 529.

^{xxviii} See Charles Darwin, *The Descent of Man, and Selection in Relation to Sex*. 2 vols. (London: John Murray, 1871), 1: 56.

^{xxix} See, for example, Ellis, “On the Musical Scales of Various Nations,” *Journal of the Society of Arts* 33 (1885): 485–527.

^{xxx} See Alexander Rehding, “Wax Cylinder Revolutions,” *Musical Quarterly* 88.1 (2005): 123–160.

^{xxxi} For a detailed critique of the blown-fifths theory, see Kathleen Schlesinger, *The Greek Aulos: A Study of ~~its~~-Its Mechanism and of ~~its~~-Its Relation to the Modal System of Ancient Greek Music* (London: Methuen, 1939), 313–350.

^{xxxii} See Carl Stumpf, *Die Anfänge der Musik* (Leipzig: Johann Ambrosius Barth, 1911), esp. 26–31. esp. (First published in 1909 in *Internationale Wochenschrift*.)

^{xxxiii} See Alexander Rehding, *Hugo Riemann and the Birth of Modern Musical Thought* (Cambridge: Cambridge University Press, 2003), 52–53.

^{xxxiv} This is outlined, for instance, in Robert W. Wason and Elizabeth West Marvin, “Riemann's ‘Ideen zu einer “Lehre von den Tonvorstellungen”’: An Annotated Translation,” *Journal of Music Theory* 36 (1992): 69–116.

^{xxxv} Riemann, *Folkloristische Tonalitätsstudien*, v–vi. “Was man [the comparative musicologists]

suchte, waren Anhaltspunkte ~~für~~-für eine abweichende Organisation des Hörapparates bei Völkern, die auf niederer Stufe der Musikkultur stehen, und man glaubte solche in den unseren Gewohnheiten widersprechenden Intonationen einzelner Intervalle zu finden (Intervalle von $\langle 3/4 \rangle$ - oder $\langle 5/4 \rangle$ -Ganzton, ‘neutrale’²² Terzen), wie solche sowohl in Phonogrammen als auch auf exotischen Musikinstrumenten sich zu finden schienen. Das ärgerliche Ergebnis dieser Forschungen der vergleichenden Musikwissenschaft war zunächst eine Erschütterung der im Laufe von Jahrtausenden langsam gewordenen Fundamente der Musiktheorie. Selbst Hellseher wie Helmholtz wurden wankend in ihrer Überzeugung, daß die Grundlagen des Musikhörens natürlich gegebene Verhältnisse sind, und ließen durchblicken, daß doch vielleicht Musiksysteme nicht naturnotwendig, sondern wenigstens teilweise² Ergebnis willkürlicher Konstruktion und Konvention sind. . . . So stellte sich schließlich heraus, daß die Abhängigkeit unseres Hörorgans von den an dasselbe herantretenden Tonreizen keine absolute, unbegrenzte ist, daß vielmehr beim Musikhören fortgesetzt ein Operieren mit feststehenden Begriffen konstatiert werden muß, ein Beurteilen der musikalischen Geschehnisse nach unser Vorstellen beherrschenden Kategorien, in welche die Einzeltonwahrnehmungen sich einordnen, wobei es bis zur strengen Ablehnung der das Ohr treffenden Intonationen als fehlerhaft und unmöglich (unlogisch) kommt. Das Durchbrechen dieser Erkenntnis zwingt aber unweigerlich dazu, an die Stelle einer Lehre von den ‘Tonempfindungen’ eine Lehre von den ‘Tonvorstellungen’ zur Fundamentierung der Musiktheorie und Musikästhetik zu fordern.“

^{xxxvi} This may be an implied swipe against Georg Capellen, who had recently published *Ein neuer exotischer Musikstil* (Stuttgart: Carl Grüniger, 1906). Since Capellen’s polemic, “Die Unmöglichkeit und Überflüssigkeit der dualistischen Molltheorie Hugo Riemanns,” in *Neue*

Zeitschrift für Musik (1901): 529–531, 541–543, 553–555, 569–572, 585–587, 601–603, 617–619, Riemann and Capellen did not see eye to eye.

^{xxxvii} Riemann, *Handbuch-der Musikgeschichte* 1.1: 50. “Hauptrepräsentant einer Epoche . . . welche in jener schlichten Einfachheit Melodien schuf, die wir auch aus uralten chinesischen und japanischen sowie keltischen Weisen kennen.”

^{xxxviii} Riemann, *Folkloristische Tonalitätsstudien*, 6.

^{xxxix} Ibid. 3.

^{xl} Erich Fischer and Ambros are mentioned in *Folkloristische Tonalitätsstudien*, 4, but Riemann is tacitly challenging a long tradition ranging from the later eighteenth century onward.

^{xli} Riemann, *Folkloristische Tonalitätsstudien*, 4.

^{xlii} Here he gives no source for the melody, but in fact he had used the same melody, and to the same end, in the *Handbuch-der Musikgeschichte*, 1.1: 52, and in “Über Japanische Musik.”

There he gives the sources as “among others in collections by Eyles Irvin and J. Barrow, and in Ambros.” He also published a harmonized version of the melody in his *Sechs originale chinesische und japanische Melodien*.

^{xliii} Riemann, *Handbuch-der Musikgeschichte*, 1.1: 52.

^{xliv} See Riemann, *Folkloristische Tonalitätsstudien*, especially 12–13: “Schlüsse auf den Zentralton kommen auch noch in schottischen und irischen Liedern vor, haben aber da nach meinem Empfinden nicht die Wirkung eines befriedigenden Abschlusses, sondern die einer dissonanzartigen Spannung.” It is worth pointing out that Riemann here captures an important feature of Scottish pentatonic music, which often exhibits internal cadences on the degree that Riemann calls *mese*.

^{xlv} Riemann, *Folkloristische Tonalitätsstudien*, 5. This notion of modulation only works under the assumption of an *a priori* diatonicism. Riemann here sidesteps a long debate about modulation within pentatonic scales, including discussions within Chinese theory.

^{xlvi} Ibid., 8.

^{xlvii} Ibid., 5.

^{xlviii} Riemann lists, for instance, examples of different uses of the *pien* in Celtic melodies, see *Folkloristische Tonalitätsstudien*, 8–11.

^{xlix} Ibid., 11. “Vielen Melodien mit pentatonischem Einschlag eignet für unser Empfinden ein auffallendes Schwanken der Schlüsse zwischen den beiden parallelen Tonarten, denen das Zentral-Pyknon angehört.”

^l Ibid.

^{li} Riemann was not the first to posit that the pentatonic scale could flesh itself out to different diatonic scales depending on which infixes filled the “gaps.” The “modulation” between different pentatonic modes or gamuts via the introduction of infixes as pivot tones was well-established. In the study of Scottish music; it had been discussed in the 1820s and 1830s by several writers, see Saussure, Louis Necker de Saussure, *Voyage en Ecosse et aux Iles Hébrides*, 3 vols. (Geneva and Paris: J. J. Paschoud, 1821), 3: 452–454; Fink, *Erste Wanderung*, 257–259. The Chinese terminology of *pien* as modulatory notes in cross-cultural comparison with Gaelic or other pentatonic musical systems had been discussed, for instance, in Saussure, *Voyage*, 3: 456–458.

^{lii} Riemann, *Folkloristische Tonalitätsstudien*, 13–14. “Nachdem bereits K. Fortlage (1847) auf die Rolle der Unterganztöne (statt des Unterhalbtones) in der Melodik der Skandinavier hingewiesen, hat besonders A. von Öttingen das Wesen der reinen Mollharmonik aufgedeckt.

Wenn auch die volle 7-stufige Mollskala ebenso wie die 7-stufige Durskala aus der Pentatonik durch Einfügung der beiden Fülltöne (Pien) sich entwickelt hat, so ist doch nicht in Abrede zu stellen, daß die neuere Musik die Durskala etwas bevorzugt, daß sie auch Moll mit eigentlich demselben fremden, nach Dur gehörigen Elementen so stark versetzt hat, dass die Mollmelodik und -harmonik fast aus dem Bewußtsein gekommen war und erst die Vordrängung einer national nordischen Musik (Hartmann, Gade, Grieg) wieder auf die eigentümlichen Wirkungen aufmerksam machte, welche dem reinen Moll eignen.”

^{lii} Arthur von Oettingen had previously suggested a reharmonization of Beethoven’s Scottish folk-song settings as a demonstration of how pure minor might work. Riemann here offers his own version of Beethoven’s folk-song settings in pure minor. On [Riemann’s and Öttingen’s engagement with Beethoven’s](#) folk-song settings, see Rehding, *Hugo Riemann and the Birth of Modern Musical Thought*, 173–182.

^{liv} Riemann, *Folkloristische Tonalitätsstudien*, 36.

^{lv} See n. 510 above.

^{lvi} Riemann, *Folkloristische Tonalitätsstudien*, 35. See August Boeckh, *Opera Pindari quae supersunt* (Leipzig: August Gottlob Weigel, 1811–1821).

^{lvii} [Riemann, Folkloristische Tonalitätsstudien](#), ~~Ibid.~~, 39.

^{lviii} *Ibid.*, 68.

^{lix} *Ibid.*, 69. “Daß aber wirklich ein Kleinterz-Pyknon allmählich statt eines Großterz-Pyknons als Zentrum sich dem Verständnis erschloß, deutet auf das Durchbrechen der Erkenntnis des Wesens der Harmonie, auf Bewußtwerden der Terz als Klangbestandteil, auf die Scheidung von Dur und Moll.”

^{lx} The preface to Riemann’s *Geschichte der Musiktheorie*, 3, is particularly enlightening here.

^{lxi} This is not to say that Riemann's melodic method was without influence. It was eagerly

~~adopted~~ ~~co-opted~~ ~~by~~ ~~for~~ the study of Germanic music that flourished around the same time.⁵ See Hans Joachim Moser, *Geschichte der deutschen Musik*, 3rd ed. (Stuttgart and Berlin: J. G. Cotta, 1923), 1: 19–22.

^{lxii} Riemann refers back to *Folkloristische Tonalitätsstudien* in his “Neue Beiträge zu einer Lehre von den Tonvorstellungen,” *Jahrbuch der Musikbibliothek Peters* (1916):⁵ 1–21. This article functions as a continuation and addition of this line of inquiry; it includes a summary of the main line of argument of *Folkloristische Tonalitätsstudien*.

^{lxiii} Riemann, “Die Phrasierung im Lichte einer Lehre von den Tonvorstellungen,” *Zeitschrift für Musikwissenschaft* 1 (1918):⁵ 26–38. This article is a review of Kurth's *Grundlagen des linearen Kontrapunkts*—a book that Riemann ~~only~~ accepts only insofar as it confirms his ideas of “tone imaginations.” The quotation is originally a comment about Kurth's work, but is one of the few points that Riemann whole-heartedly subscribes to. Kurth's blistering response follows in *Zeitschrift für Musikwissenschaft* 1 (1918):⁵ 176–182. </N>

^{lxiv} A comparison with Riemann's early study, *Neue Schule der Melodik* (1883), may suggest itself. Despite the title, however, this early work is not so much a treatise on melody as one on tonal counterpoint.